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10/586,552

09/14/2006

Bjorn Westerberg

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EXAMINER

TRAN, BINH Q

ART UNIT

PAPER NUMBER

3748

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/586,552 | Applicant(s) WESTERBERG, BJORN | |
| | Examiner BINH Q. TRAN | Art Unit 3748 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4,6,7,10 and 18-27 is/are rejected.
- 7) ☒ Claim(s) 2,3,5,8,9 and 11-17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>07/19/2006</u> . | 6) <input type="checkbox"/> Other: ____ |

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DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment dated May 16, 2006 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 4, 6-7, 10, and 18-27 are rejected under 35 U.S.C. 102 (e) as being anticipated by Van Nieuwstardt et al. (Van Nieuwstardt) (Patent Number 6,981,368).

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Regarding claims 1, and 22, Van Nieuwstardt discloses a method and apparatus for controlling injection of a reducing agent upstream from a catalyst (14) in an exhaust line from a combustion engine (11), the method comprising: calculating an accumulation actual value (22) representative of a current accumulation in the catalyst of a reducing substance forming part of or formed by the reducing agent based on information from a computation model (e.g. See Equations 1a and 1b), wherein the model takes into account expected reactions in the catalyst under prevailing operating conditions, and the model continuously determines the current state of the catalyst, calculating an accumulation setpoint value (C_x) based on an emission setpoint value (C_{in} , C_{out}) and information from the computation model, wherein the emission setpoint value is representative of a desired content, in exhaust gases leaving the catalyst, of an exhaust gas substance which, as the exhaust gases pass through the catalyst, is at least partly removed from the exhaust gases by the action of the reducing substance or formed by the action of the reducing substance (e.g. See col. 4, lines 4-67), and the accumulation setpoint value is representative of the reducing substance accumulation required in the catalyst under prevailing operating conditions for substantially achieving the emission setpoint value, comparing the accumulation actual value with the accumulation setpoint value, and controlling the injection of reducing agent in the exhaust line based on the comparison between the accumulation actual value and the accumulation setpoint value (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 4, Van Nieuwstardt further discloses calculating an NO_x conversion capacity of the catalyst under prevailing operating conditions based on information from the computation model and taking the NO_x conversion capacity into account in calculating the accumulation setpoint value (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 6, Van Nieuwstardt further discloses determining an emission actual value by calculation or measurement, wherein the emission actual value is representative of the current content of the exhaust gas substance in the exhaust gases leaving the catalyst, comparing the emission actual value with the emission setpoint value, and calculating the accumulation setpoint value on information from the computation model and the conformity between the emission actual value and the emission setpoint value (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 7, Van Nieuwstardt further discloses wherein the emission actual value is calculated by means of the computation model or on the basis of information from the computation model (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 10, Van Nieuwstardt further discloses wherein according to the computation model, the catalyst is divided in its longitudinal direction into a multiplicity of segments, and wherein the accumulation actual value and the accumulation setpoint value refer respectively to current and required reducing substance accumulation in the segment situated nearest to an inlet end of the catalyst (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 18, Van Nieuwstardt further discloses wherein the emission setpoint value is calculated on the basis of prevailing operating conditions (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 19, Van Nieuwstardt further discloses using at least the following parameters in the computation model when generating information for the calculation of the accumulation actual value and the accumulation setpoint value: exhaust gas temperature

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upstream from the catalyst, concentration of the exhaust gas substance in the exhaust gases upstream from the catalyst, exhaust mass flow through the catalyst, and an amount of reducing agent injected (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 20, Van Nieuwstardt further discloses wherein urea or ammonia is used as reducing agent, whereby the reducing substance takes the form of ammonia (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 21, Van Nieuwstardt further discloses wherein the exhaust gas substance takes the form of NO_x (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 23, Van Nieuwstardt further discloses a determining device operable by calculation or measurement for determining an emission actual value representative of the current content of the exhaust gas substance in the exhaust gases leaving the catalyst and the second computation device is operable for calculating the accumulation setpoint value on the basis of information from the computation model and the conformity between the emission actual value and the emission setpoint value (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 24, Van Nieuwstardt further discloses computer program directly loadable to the internal memory of a computer, which computer program comprises program codes for implementing a method according to claim 1 (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 25, Van Nieuwstardt further discloses computer program product comprising a medium which is readable by an electronic control unit and has stored on it a computer program intended to cause an electronic control unit to implement a method according to claim 1 (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

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Regarding claim 26, Van Nieuwstardt further discloses electronic control unit comprising an execution means a memory connected to the execution means and a storage medium connected to the execution means, and a computer program comprising program code for implementing a method according to claim 1 and stored in the storage medium (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Regarding claim 27, Van Nieuwstardt further discloses wherein continuously determining the current state of the catalyst includes the accumulation of the reducing substance in different parts of the catalyst and the conversion of exhaust gas substance taking place in different parts of the catalyst (e.g. See col. 5, lines 5-67; col. 6, lines 1-50).

Claims 24-26 are rejected under 35 U.S.C. 102 (e) as being anticipated by Yasui et al. (Yasui) (Patent Number 7,204,081).

Regarding claim 24, Yasui further discloses computer program (2) directly loadable to the internal memory of a computer, which computer program comprises program codes for implementing a method according to claim 1 (e.g. See col. 8, lines 42-51).

Regarding claim 25, Yasui further discloses computer program product (2) comprising a medium which is readable by an electronic control unit and has stored on it a computer program intended to cause an electronic control unit to implement a method according to claim 1 (e.g. See col. 8, lines 42-51).

Regarding claim 26, Yasui further discloses electronic control unit (2) comprising an execution means a memory connected to the execution means and a storage medium connected

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to the execution means, and a computer program comprising program code for implementing a method according to claim 1 and stored in the storage medium (e.g. See col. 8, lines 42-51).

Allowable Subject Matter

Claims 2-3, 5, 8-9, and 11-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit ***Final Formal Drawings (If Needed)*** in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Gabrielsson et al. (Pat. No. 7200990), Upadhyay et al. (Pat. No. 6993900), Genderen et al. (Pat. No. 6742330), Dolling et al. (Pat. No. 5950422), and Woll et al. (Pat. No. 7073465) all disclose an exhaust gas purification for use with an internal combustion engine.

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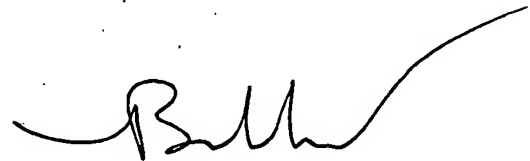
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
September 01, 2007



Binh Q. Tran
Patent Examiner
Art Unit 3748